NASA Policy Directive

NPD 8010.2D
Effective Date: May 14, 2004
Expiration Date: May 14, 2009

COMPLIANCE IS MANDATORY

Printable Format (PDF)

Subject: Use of the SI (Metric) System of Measurement in NASA Programs

Responsible Office: Office of the Chief Engineer

1. POLICY

Federal requirements for use of the SI measurement system are established in the authorities referenced in Sections 3.a. and 3.b below. NASA policy for systems of measurement to be used on NASA programs/projects is as follows:

a. The International System of Units (commonly known as the SI - Systeme Internationale - or metric system of measurement), defined by the references of Section 4.a and 4b.below, is the preferred system of weights and measurement for NASA.

b. All new programs and projects shall use the SI system of measurement in preference to customary U.S. measurement units, including related NASA procurements, grants, and business activities, except where the cognizant Program Manager or Headquarters Official-in-Charge determines that use of SI units is impractical, adds unacceptable risk, or is likely to cause significant inefficiencies or loss of markets to U.S. firms. Special emphasis shall be placed on maximum use of SI units in international cooperative programs.

c. For the purposes of this policy, use of SI units may be considered impractical where it can be demonstrated to result in substantial increases in cost or unacceptable delays in schedule needed to obtain SI components.

d. The Program Manager shall determine the proposed use, exceptions, limitations, and support requirements for use of the SI system of measurement prior to the Systems Requirements Review or equivalent milestone during new Program/Project Formulation, per the reference of Section 4.c. below. Determinations on where and how the SI system is to be used shall be documented in each Program or Project Management Plan.

e. Where full implementation of the SI system is not practical, as determined per 1.b above, hybrid units (i.e., a mix of SI/non-SI system elements) may be used in a program or project to maximize practical use of SI units, subject to establishment of specific configuration controls for interfaces between elements using different measurement systems.

f. Programs and projects shall minimize risk of errors by consistent labeling of measurement units throughout all documentation.

g. Soft SI units (non-SI measurements numerically converted to SI units solely for the purpose of representing data in SI units) and dual units (data represented in both SI units and customary U.S. units of measure) shall not be used except where there is a specific need for ensuring compatibility, e.g. at hybrid interfaces or clarity, such as in public affairs information. Dual units on drawings, when required, shall be in accordance with the requirements of the reference in Section 4.d below.

h. Programs and projects may permit continued use of non-SI systems of measurement for existing projects currently based on non-SI systems.

i. NASA will encourage and accommodate increasing the use of the SI measurement system as support capabilities increase, will acquire capabilities to support that goal wherever practical, and will cooperate with the private and public sectors to overcome barriers to the use of the SI system and increase understanding of the SI system.

j. NASA will establish and maintain an inventory of internal resources for SI design to support increased SI use by programs and projects.

2. APPLICABILITY

This NPD is applicable to NASA Headquarters and NASA Centers, including Component Facilities, and to the Jet Propulsion Laboratory to the extent specified in the contract. The requirements of this NPD shall be included in NASA contracts, grants, and business activities where applicable.

3. AUTHORITY

a. 15 U.S.C. §205b, Section 3 of the Metric Conversion Act of 1975, Public Law 94-168, as amended by the Omnibus Trade and Competitiveness Act of 1988, Public Law 100-418.

b. Executive Order 12770, Metric Use in Federal Government Programs, July 25, 1991.

4. REFERENCES

a. ANSI/ASTM/IEEE SI-10, American National Standard for Use of the International System of Units (SI), the Modern Metric System.

b. Federal Standards 376B, Preferred Metric Units for General Use by the Federal Government.

c. NPR 7120.5 NASA Program and Project Management Processes and Requirements.

d. ANSI/ASME Y14.5M, American Society of Mechanical Engineers Standard for Dimensioning and Tolerancing.

5. RESPONSIBILITY

The Chief Engineer is responsible for:

(1) Coordinating and overseeing implementation of this policy, including acting as the final decision authority for disputes concerning the application of the exception set forth in 1.b. above.

(2) Advising Enterprise Associate Administrators regarding the use of the SI system of measurement.

(3) Serving as the NASA Metric Executive on the Interagency Council on Metric Policy.

(4) Evaluating measurement system decisions and implementation for consistency with policy for Program/Project reviews conducted during the formulation phase in accordance with NPR 7120.5.

(5) Maintaining an inventory of SI support capabilities within NASA.

b. NASA Headquarters Officials-in-Charge are responsible for:

(1) Consulting with the Chief Engineer on opportunities for increasing use of the SI measurement system.

(2) Reviewing measurement system decisions and reporting to the NASA Chief Engineer any cases in which exceptions to use of the SI system on programs/projects, or in procurements, etc., are approved in accordance with Section 1.b. above.

(3) Ensuring that measurement system decisions are properly implemented and do not result in undue risk.

c. Program Managers are responsible for:

(1) Conducting analyses, reviewing recommendations, and approving selection of measurement systems for programs/projects and related NASA procurements, grants, and business activities during the formulation process specified in Reference 4.c above.

(2) Determining for programs and projects under their cognizance where use of SI units is impractical, adds additional unacceptable risk, or is likely to cause significant inefficiencies or loss of markets to U.S. firms, and, in such cases, documenting this conclusion in the appropriate program or project plans.

(3) Ensuring appropriate interface configuration controls are established in programs and projects using hybrid units in accordance with Section 1.e above.

(4) Reporting exceptions and limitations to use of the SI measurement system to the responsible Headquarters Official-in-Charge.

d. Directors of NASA Centers are responsible for:

(1) Ensuring timely analysis, evaluation, documentation, and review of opportunities and requirements for use of the SI system on those programs/projects for which they have responsibility.

(2) Planning for and implementing use of the SI system of measurement except where the cognizant Program Manager of Headquarters Official-in- Charge has determined that use of the SI measurement system is impractical, adds unacceptable risk, or is likely to cause significant inefficiencies or loss of markets to U.S. firms.

(3) Establishing and maintaining capabilities for providing effective and consistent support of the SI system of measurement for design, analysis, fabrication, test, and operations on current and future NASA programs/projects.

6. DELEGATION OF AUTHORITY

Authority to approve cases in which use of the SI system of measurement is impractical, adds additional unacceptable risk, or is likely to cause significant inefficiencies or loss of markets to U.S. firms is delegated to Program Managers, as appropriate, subject to oversight by the Chief Engineer.

7. MEASUREMENTS

None.

8. CANCELLATION

NPD 8010.2C, Use of the Metric System of Measurement in NASA Programs, dated July 20, 2000.

/s/ Sean O'Keefe
Administrator

ATTACHMENT A: (TEXT)

None.

(URL for Graphic)

None.

DISTRIBUTION:
NODIS
